Listings of claims:

18. (Currently Amended) A power saving automatic zoned dryer assembly for a printing press having a substrate travel path, comprising:

a dryer head adapted for mounting in the printing press facing the substrate travel path, the dryer head having a multiplicity of IR lamps connected individually or in groups to form a plurality of heating zones, each zone running longitudinally along and extending laterally across part of the travel path, the IR lamps positioned to irradiate a surface of a substrate on the substrate travel path;

a power supply operably connected to the IR lamps in a manner that allows output of said IR lamps connected individually or in groups in each ~~plurality of~~ heating zones to be controlled separately;

a control unit connected to the power supply, the control unit being operable to individually adjust output of the IR lamps connected individually or in groups in each heating zones;

a plurality of sensors spaced laterally across the substrate path to generate signals indicative of temperatures ~~corresponding to~~ of heated areas of the surface of substrates passing under the heating zones when the press is printing; and

whereby the temperature of substrates in the travel path corresponding to areas heated by the heating zones can be adjusted and controlled by the control unit which adjusts output of the heating zones in response to the signals generated by said sensors while the press is printing.

19. (Original) The assembly of claim 18 wherein said plurality of heating zones comprise at least two heating zones, each having an output which is separately adjustable.

20. (Original) The assembly of claim 19 wherein at least some of the plurality of sensors are mounted in a housing which has an air supply for passage of air under pressure to prevent dust or spray powder from interfering with operation of the sensors.

21. (Original) The assembly of claim 20 wherein the air supply of the housing is offset to introduce swirling air around the sensor.

22. (Original) The assembly of claim 18 wherein the control unit includes one or more programmable controllers which receive the sensor outputs and adjust the heating zones to achieve a preselected desired set point temperature in the heated areas.

23. (Original) The assembly of claim 22 wherein the control unit includes an input and monitoring device which receives operating parameters from the operator and sends data to said one or more controllers, including the temperature set points, and monitors temperature in said heated areas of said heating zones as indicated by the sensors.

24. (Original) The assembly of claim 23 wherein the input and monitoring device is a touchscreen operably connected to programmable controllers comprising loop controllers having a feedback control loop for each of the multiplicity of IR lamps which regulate the IR lamps.

25. (Currently Amended) A power saving method of regulating temperature of printed or coated surfaces of substrates exposed to infra-red (IR) ~~drying~~ heating as they move along a substrate path in a printing press, comprising the following steps:

moving a succession of printed substrates along the substrate path;

providing an IR ~~dryer~~ heater comprising a plurality of separately controlled IR heating zones, each zone running longitudinally along and extending laterally across part of the substrate path;

heating a plurality of longitudinally extending, laterally spaced heated areas on a surface of the printed substrates corresponding to the heating zones as the substrates pass under the IR heating zones of the IR dryer;

sensing the temperature of the heated areas of the substrate surface; and

adjusting the output of the heating zones in response to the sensed temperature of the heated areas of the substrate surface corresponding to said heating zones.

26. (Original) The method of claim 25 wherein the step of heating a plurality of longitudinally extending, laterally spaced heated areas on the printed substrates corresponding to the heating zones includes the step of simultaneously scrubbing the surface of the heated areas with high velocity air.

27. (Original) The method of claim 26 further including the step of extracting spent high velocity air after it has scrubbed the heated areas.

28. (Original) The method of claim 25 further including the step of providing a supply of pressurized air; and

scrubbing the printed or coated surface of the substrate sheets with high velocity air from said source.

29. (Original) The method of claim 28 wherein said source provides pressurized heated air and the surface is scrubbed with high velocity heated air from said source.

30. (Original) The method of any one of claims 25-29 further including the step of extracting air from the press delivery system.

31. (Original) The method of claim 25 wherein the step of providing an IR dryer includes setting desired set point temperatures for the heated areas and the step of adjusting the output of the heating zones comprises the step of making the sensed temperatures in each heated area approximate the desired set point temperatures by changing the output of one or more of the heating zones.

32. (Original) The method of claim 25 further including the step of establishing set point temperatures for the heated areas and wherein the step of adjusting the output of the heating zones is performed in a manner that regulates the temperature of the heated areas near the set point temperatures.

33. (Original) The method of claim 32 wherein said step of adjusting the output of the heating zones is performed in such a manner that the desired set point temperatures of the heated areas are regulated at about the same desired temperature.

34. (Original) The method of claim 25 wherein the step of providing a plurality of separately controlled IR heating zones includes establishing said heating zones across a width of substrate path in excess of the substrate width and the step of heating a plurality of heated areas on printed substrates passing under the IR dryer includes the step of operating only heating zones within the width of the substrates moving along the substrate path.

35. (Original) The method of claim 25 further including the step of passing air under pressure through the IR dryer to impinge on the printed substrates.

36. (Original) The method of claim 35 further including the step of providing a source of pressurized air across the substrate travel path; and

impinging high velocity air upon the printed or coated substrate either before or after the heating step is performed.

37. (Original) The method of claim 36 wherein the source of pressurized air comprises heated air and the step of impinging the surface of the printed sheet with high velocity air comprises the step of impinging said surface with heated high velocity air.

38. (Original) The method of one of claims 36 or 37 wherein the method further includes an extraction step whereby air is extracted from the press delivery system.

39. (Original) The method of claim 35 further including the step of directing the air passing through the IR dryer to flow through the heating zones thereby heating the air before it impinges on the substrates.

40. (Original) The method of claim 25 wherein the step of sensing the temperature of the heated areas is performed by a plurality of sensors and further includes the step of providing air under pressure to one or more of said sensors to prevent dust or spray powder from interfering with sensor efficiency.

41. (Original) The method of claim 40 wherein the step of providing pressurized air to one or more of said sensors comprises the step of swirling the air to reduce deposits of dust or spray powder on sensor sensing surfaces.

42. (Currently Amended) A power saving method of regulating temperature of differentially heatable areas of surfaces of printed substrates exposed to infra-red (IR) ~~drying~~ heating as they move along a substrate path in a printing press; comprising:

moving a succession of printed substrates along the substrate path;

providing an IR ~~dryer~~ heater head assembly spaced from the substrates, the ~~dryer~~ heater head assembly having a plurality of IR heating zones with adjustable outputs, each zone running longitudinally along and extending laterally across part of the width of the substrates;

operating said plurality of IR heating zones while substrates are moving along the substrate path;

generating signals representative of temperatures of portions of the substrates corresponding to heated areas of the surfaces of the substrates passing under the IR heating zones;

adjusting and controlling output of the IR heating zones in response to said signals in order to selectively maintain temperature of the surface of the substrates passing under the IR heating zones within a desired range of temperature despite absorption of different amounts of IR energy in areas of the substrates passing under different heating zones;

whereby printed substrates having a more even temperature profile are delivered.

43. (Original) The method of claim 42 wherein the step of adjusting and controlling the output of the heated zones in response to signals representative of temperatures of substrates corresponding to heated areas of substrates passing under heating zones includes the step of periodically incrementing or decrementing the power supplied to the

heating zones by an amount based upon the signals representative of the temperature of the printed substrates corresponding to heated areas of the substrates passing under the heating zones.

44. (Currently Amended) The method of claim 43 wherein the step of generating signals representative of temperatures of the substrates corresponding to heated areas of the substrates passing under the IR heating zones comprises the step of operating sensors positioned to sense a surface of the heated areas.

45 - 51. (Cancelled)